

IV. Remarks**A. Claim Amendments**

Claims 1-37 are pending in the present application. These claims have been amended to clarify some terminology used therein. Per these amendments, several instances of "uncured or partially cured mat" have been changed to "insulation web." This amendment has not been made for any reason related to patentability and does not narrow the claims in any sense. Rather, the amendments merely refer to the uncured or partially insulation structure as an "insulation web" and the cured structure as an insulation mat, per common parlance in the art. Several "wherein" clauses have also been amended to better recite that the heating/curing step forms the "insulation web" into an "insulation mat" and also bonds the nonwoven sheet to a major surface of the so-formed insulation mat with the heat curable binder agent.

B. Claim Rejection under 35 U.S.C. §102

The Action rejects claims 1-7 and 10 as being anticipated by U.S. Patent No. 5,685,938 to Knapp et al. Reconsideration and withdrawal of this rejection are respectfully requested in view of the following arguments.

Claim 1 is directed to a method of making an insulation product and recites three steps:

- (a) forming an uncured or partially cured insulation web containing randomly oriented inorganic fibers and a heat curable binder agent;
- (b) applying a nonwoven sheet to said web, said nonwoven sheet comprising randomly oriented glass fibers; and
- (c) heating said uncured or partially cured web and said nonwoven sheet together to cure said web to form a low density mat and to bond said nonwoven sheet to a first major surface of said low density mat with said heat curable binder agent.

Importantly, claim 1 recites that a nonwoven sheet is applied to an uncured or partially cured insulation web mat that contains randomly oriented fibers and a heat curable binder. Claim 1 then recites that these two elements – the nonwoven sheet and the insulation web – are heated together to cure the insulation web to form an insulation mat and to bond the nonwoven sheet to the insulation mat with the heat curable binder agent. No such methodology is taught or suggested by Knapp et al.

The method of Knapp is illustrated in FIG. 6. As explained by Knapp et al., a continuous glass fiber mat 11 is formed in a conventional manner and transported by a series of conveyors. As those of ordinary skill will understand, the mat 11 is already in cured form. That mat 11 is already cured is apparent by the absence of a curing oven in the diagram of FIG. 6 and Knapp et al.'s description of FIG. 6 that "a facing is applied to the bottom of the encapsulated glass fiber mat 15 such as described above, **and the finished mat is then chopped into individual encapsulated insulation pieces or assemblies 50, which are then packaged for shipment.**" (Col. 5, Line 66-Col. 6, Line 3) (emphasis added).

That mat 11 is already in cured form before any sheet layer is applied to it is an important difference from the process of claim 1. Claim 1 recites the step of heating said uncured or partially cured insulation web and said nonwoven sheet together both cures the web to form a low density mat **and** bonds the nonwoven sheet to a first major surface of the insulation mat with the heat curable binder agent. By utilizing the heat curable binder agent of the insulation mat to bind not only the fibers of the insulation mat but also the nonwoven sheet to the insulation mat, the method of claim 1 removes the need for the application of a separate adhesive post-curing to adhere the nonwoven sheet to the mat. Such a process is neither taught nor suggested by Knapp et al.

The bottom facing layer 31 of the mat of Knapp et al. is bitumen (i.e., asphalt) coated Kraft paper. The bitumen serves to adhere the Kraft paper layer to the insulation mat. (FIGS. 5 and 6; Col. 4, Lines 53-63; Col. 5, Lines 65-66). The top and sides of the mat are covered with a web of encapsulation material 152, which is adhered to the insulation mat by a hot melt adhesive

sprayed onto the fiber mat 11 or directly on to the encapsulation material 152. (FIG. 6, Col. 5, Lines 13-41). Neither the bitumen (in the case of Kraft paper layer 31) nor the hot melt adhesive (in the case of the encapsulation material 152) is the "heat curable binder agent" that binds the fibers of the insulation mat 11 as required by the claim. Further, as discussed above, these layers are clearly applied to the insulation mat 11 of Knapp et al. after the curing process used to form insulation mat 11.

Still further, claim 1 recites that the nonwoven sheet comprises "randomly oriented glass fibers." The rejection of claim 1 fails to address this feature. Clearly, layer 31, which is a paper layer, is not a nonwoven sheet comprising randomly oriented glass fibers as claimed. Encapsulation layer 152 (which forms layer 52 in FIG. 3) is a polymeric layer (See Column 4, Lines 3-43), and thus also not a nonwoven sheet comprising randomly oriented glass fibers as claimed.

Accordingly, it is submitted that Knapp et al. does not teach each feature of the method of claim 1 and that claim 1 is not anticipated by Knapp et al. Further, it is also submitted that claims 2-7 and 10, which depend from claim 1, are also not anticipated by the cited reference. Reconsideration and withdrawal of the rejection of these claims are respectfully requested.

C. Rejection under 35 U.S.C. §103

1. Claims 11-16, 18 and 19

The Action rejects claims 11-16, 18 and 19 as being obvious from Knapp et al. in view of U.S. Patent No. 5,804,254 to Nedwick et al.

Like claim 1, independent claim 11 recites that both the nonwoven sheet and the uncured or partially cured insulation web are heated together when curing the insulation web to form the low density insulation mat and to bond the nonwoven sheet to the first major surface of the mat with the heat curable binder agent used in the mat. As explained above, contrary to the Examiner's assertions, Knapp et al. does not teach these features. Therefore, the combination of Knapp and Nedwick does not teach each feature claimed in the method of claim 11.

Accordingly, it is submitted that claim 11 and claims 12-16, 18 and 19, which depend from claim 11, are allowable over the cited references.

2. Claim 17

The Action rejects claim 17 as being obvious from Knapp in view of U.S. Patent No. 4,310,585 to Alderman. Claim 17 depends from claim 11, which is allowable as set forth above. For at least these reasons, it is submitted that claim 17 is allowable over the cited combination.

It is also noted that the Examiner's rejection of claim 17 is deficient in that it cites to only Knapp and Alderman while the Examiner conceded in the rejection of independent claim 11 that this combination did not teach each feature of claim 11, from which claim 17 depends.

3. Claims 20-37

The Action rejects claims 20-37 as being obvious from Knapp et al. in view of U.S. Patent No. 4,310,585 to Shannon in view of Alderman et al.

(a) Claims 20-28

As understood by Applicants, in rejecting independent claim 20 the Examiner again relies on Knapp for teaching the process by which an uncured or partially cured insulation web is formed, a nonwoven sheet is applied to the insulation web, and the combined structure is heated to cure the binder, resulting in a cured mat and the bonding of the nonwoven sheet to the cured mat with the binder agent. As explained in detail above, Knapp et al. discloses no such process.

Still further, claim 20 requires that the nonwoven sheet comprise first randomly oriented fibers and second randomly oriented fibers, said first randomly oriented fibers having a melting point above a temperature used in curing said insulation web and said second randomly oriented fibers having a melting point below said temperature used in curing said insulation web. The Examiner relies on Shannon for teaching this feature, specifically FIG. 9 of Shannon. The description of FIG. 9 states that each layer 132, 134, 136 and 138 is formed of glass fibers impregnated with a binder. Therefore, only one kind of fiber – glass – is used in these layers.

Clearly, the binder used in these layers does not satisfy the second randomly oriented fibers feature, as the binder is not a “fiber.” That is, the glass fibers of Shannon cannot be said to be impregnated with other “fibers.” More likely, the glass fibers are impregnated with some form of liquid binder material.

Accordingly, Shannon does not teach a nonwoven sheet comprising first randomly oriented fibers and second randomly oriented fibers, said first randomly oriented fibers having a melting point above a temperature used in curing said insulation web and said second randomly oriented fibers having a melting point below said temperature used in curing said insulation web, as claimed in claim 20.

It is submitted that the combination of references relied on by the Examiner does not teach each feature of claim 20. Therefore, it is submitted that claim 20 and claims 21-28, which depend from claim 20, are not obvious from and are allowable over the cited combination references.

(b) Claims 29-37

Independent claim 29 is also directed to a method of making an insulation product. Like claim 20, claim 29 recites that the nonwoven sheet comprises first randomly oriented fibers and second randomly oriented fibers, said first randomly oriented fibers having different melting temperatures. As discussed above in connection with claim 20, this feature is not taught by Shannon.

Further, claim 29 recites that the nonwoven sheet is applied to the mat after the insulation web curing step (b) and “while said low density mat is at an elevated temperature from step (b).” The first fibers have a melting point above the “elevated temperature” and the second randomly oriented fibers having a melting temperature below the “elevated temperature.” Neither Knapp et al. nor Shannon teaches or suggests applying a nonwoven sheet as claimed to a cured mat while the mat is still at an elevated temperature from the curing step. Indeed, the Examiner’s rejection of this claim does not even address this feature.

For at least these reasons, it is submitted that claim 29 and dependent claims 30-37 are not obvious from and are allowable over the cited reference.

D. Claims 8 and 9

The Office Action summary states that all of claims 1-37 are rejected, but the Detailed Action section fails to address claims 8 and 9. Examination of these claims is respectfully requested in any future Action. It submitted that any subsequent Action addressing these claims should be made non-final so as to afford Applicants the full and fair opportunity to respond to any rejection of these claims.

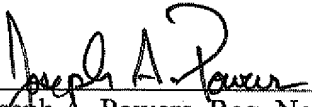
V. Conclusion

In view of the foregoing remarks and amendments, Applicants submit that this application is in condition for allowance at an early date, which action is earnestly solicited.

The Commissioner for Patents is hereby authorized to charge any additional fees or credit any excess payment that may be associated with this communication to deposit account 04-1679.

Respectfully submitted,

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